

Name:

Solutions

1. Simplify $\frac{12x+4}{4} = 3x+1$

2. Simplify $\frac{9y+15}{3} = 3y+5$

3. Simplify $\frac{8m+3}{2}$ Be careful $4m + \frac{3}{2}$ or already simplified

4. Simplify $\frac{14k+7}{21} = \frac{2k+1}{3}$

5. Simplify $\frac{y-8}{8-y} = -1$

6. Simplify $\frac{x^2-9}{x-3} = \frac{(x-3)(x+3)}{x-3} = x+3$

7. Simplify $\frac{m^2+9}{m+3}$ Be careful *Already simplified*

8. Simplify $\frac{k+3}{k^2-9} = \frac{k+3}{(k-3)(k+3)} = \frac{1}{k-3}$

9. Simplify $\frac{4x^2-25}{2x-5} = \frac{(2x-5)(2x+5)}{2x-5} = 2x+5$

10. Simplify $\frac{y^2-25}{y^2-10y+25} = \frac{(y-5)(y+5)}{(y-5)(y-5)} = \frac{y+5}{y-5}$

11. Simplify $\frac{3m^2 + 14m - 5}{3m^2 - 11m + 6} = \frac{(3m - 1)(m + 5)}{(3m - 2)(m - 3)}$ already simplified

12. Simplify $\frac{k^3 + 8}{k + 2}$ Be careful $= \frac{(k + 2)(k^2 - 2k + 4)}{k + 2} = k^2 - 2k + 4$

13. Simplify $\frac{4x + 1}{x - 6} \times \frac{x - 6}{4x - 1} = \frac{4x + 1}{4x - 1}$

14. Simplify $\frac{y^2 + 3y - 18}{y^2 - 10y + 21} \times \frac{y^2 - 5y - 14}{y^2 + 8y + 12} = \frac{(y + 6)(y - 3)(y - 7)(y + 2)}{(y - 3)(y - 7)(y + 2)(y + 6)} = 1$

15. Simplify $\frac{3x - 12}{4x + 16} \div \frac{6x - 24}{8x + 32} = \frac{3(x - 4)}{4(x + 4)} \cdot \frac{8(x + 4)}{6(x - 4)} = \frac{3 \cdot 8}{4 \cdot 6} = 1$

16. Simplify $\frac{x^2-25}{x^2-3x-70} \div \frac{x^2-10x+25}{x^2+2x-35} = \frac{(x-5)(x+5)}{(x-10)(x+7)} \cdot \frac{(x+7)(x-5)}{(x-5)(x-5)}$

$$\frac{(x+5)}{(x-10)} = \frac{x+5}{x-10}$$

17. State all real number restrictions on x : $\frac{x^2+14x+49}{x-7}$

$$x-7 \neq 0 \quad x \neq 7$$

18. State all real number restrictions on x : $\frac{8x^3-27}{4x+3}$

$$4x+3 \neq 0 \quad 4x \neq -3 \quad x \neq -\frac{3}{4}$$

19. State all real number restrictions on x : $\frac{x^2-36}{x^2+36}$

$$x^2+36 \neq 0 \quad \text{No restrictions from real numbers}$$

20. State all real number restrictions on x : $\frac{x^2-2x+1}{x^2-64}$

$$x^2-64 \neq 0 \quad (x-8)(x+8) \neq 0$$

$$\begin{array}{ll} x-8 \neq 0 & x \neq 8 \\ x+8 \neq 0 & x \neq -8 \end{array}$$

21. State all real number restrictions on x : $\frac{x^2-3x-18}{5x^2+20x}$

$$5x^2+20x \neq 0 \quad 5x(x+4) \neq 0$$

$$\begin{array}{ll} 5x \neq 0 & x \neq 0 \\ x+4 \neq 0 & x \neq -4 \end{array}$$